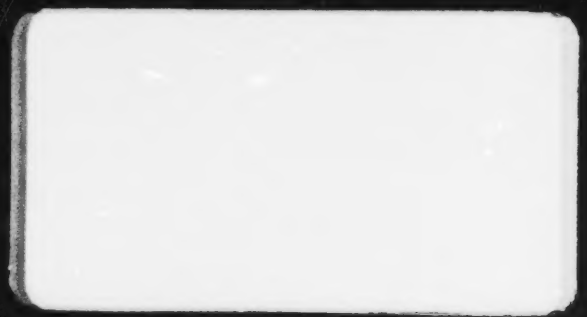

Manitoba
Industry, Trade
and Technology

Manitoba

Industry, Trade and Technology

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PROFILE OF THE MANITOBA SOFTWARE INDUSTRY

November 1987

FOR PUBLIC DISTRIBUTION

Information Technology Industry Development

Industry Development Program

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All information and data collected for this document are presented for illustration, and no attempt has been made to corroborate the validity and accuracy of the sources for such data

FOREWORD

The "Profile of the Manitoba Software Industry" was prepared following a comprehensive survey of the status of the Manitoba software industry sector, undertaken in the Spring of 1987 by InfoTech's Industry Development Program (IDP). The survey consisted of personal interviews in two parts; To collect background information about the companies and to determine the issues, needs for support and the obstacles pertaining to the development and growth of a viable and strong software industry in Manitoba.

In order to place the results of the study into the proper context, the document has been assembled in four parts: to provide a perspective of the information economy, to understand the importance of software as it relates to the changing international market; to comment in general terms on the status, issues and challenges of the Canadian environment; to present the survey results discussing the strengths, opportunities and challenges facing the Manitoba software industry; and finally, to review the status of investment, research and development in Canada in reference to the software industry.

The ultimate aim of this document is to inform policy makers in provincial and federal agencies and industry on the strengths of the Manitoba software industry. In particular, the areas where efforts should be concentrated in assisting companies to maximize their opportunities for growth in this market. Also, to share the findings and evaluate them in context to the experience of other provincial and federal jurisdictions.

Major sources of information for this analysis were obtained from Statistics Canada, International Data Corporation (Canada), Economic Council of Canada, Evans Research Corporation, Department of Regional Industrial Expansion (DRIE), Organisation for Economic Co-operation and Development (OECD) and other federal government and industry reports.

For the purposes of this document ***software*** *is defined as a set of programs, procedures, rules and routines used to instruct a computer processor (hardware) in performing specific computational and information handling functions. Software may be further classified as systems software (to support computer processes), application software (to support user processes), and systems development software (to support computer programmers or users in the development of either systems and applications software). Custom developed software is a professional service, thus not usually considered a part of the software products industry.*

EXECUTIVE SUMMARY

The Manitoba Government, through the Department of Industry, Trade and Technology, implemented in 1983 a number of programs to support technology development. The Information Technology Program (InfoTech) was established in 1985 to provide the focus for the development of information technology industries and to promote the application of these technologies in the education and business sectors.

InfoTech, through its Industry Development Program, conducted a comprehensive survey to ascertain the size and needs for assistance of this sector, in order to raise the profile of the Manitoba software and courseware industry and provide the necessary support for its development. In order to provide assistance to this industry, InfoTech assists companies in the preparation of business plans, conduct market research and identify sources for financial investment and assistance. It also coordinates its activities with provincial and federal programs to maximize support opportunities. The Centre also provides incubation space for start-up companies interested in the development and marketing of software and educational courseware.

Several Manitoba software companies have produced world class horizontal and vertically integrated applications and systems development software in fields of engineering, finance and business management. Some of their products are being marketed successfully through American publishers and as a result of their direct marketing effort.

There are approximately ninety firms involved in the development of software in Manitoba. A comprehensive questionnaire was designed to determine the status and needs requiring attention to develop this industry. The survey was conducted through personal interviews with 75 companies involved in the development of proprietary software.

Completed surveys from fifty seven companies (76%) participated in time for its processing. However, the sample included most major companies, hence reinforcing the validity of opinions and results of the study as representative of the needs of this industry. The results of the survey have provided the following preliminary conclusions:

- The size of the industry, based on the sample studied, is estimated in excess of $52 million employing over 900 professionals and support staff.

- The packaged software industry in Manitoba is largely a cottage operation with most companies emerging as a result of the introduction and maturity of the micro-computer market.

- Several Manitoba companies have proven to have the sophistication, skills, ideas and technical expertise to develop world class horizontal and vertically integrated software products, providing the leadership to establish a vibrant new industry in the Province.

EXECUTIVE SUMMARY

- Given the investment levels required and the limited availability of venture capital, most of these companies would welcome effective R&D tax credits for software research. Government assistance to match privately raised funds are still required to reduce the risk of private investors, allowing companies to attract the required capital needed to continue stimulating this sector.

- Most companies require continued assistance to link-up with marketing expertise to promote their products, and identified the need for a catalogue of software products made in Manitoba for distribution in government and industry.

- The export trade rules and regulations (e.g. licencing) was the most frequently mentioned negative factor in dealing with international markets. Most of them indicated entering the export market through self-marketing requesting limited support from government.

- A significant number of companies indicated that increased emphasis on sales and marketing and innovative software development were the most important factors for future growth, citing financial constraints for research and development being one the most important inhibitors.

- Eighty percent of respondents anticipated staff increases in the next two years, with university and computer programming graduates needed to support increases in production.

In summary, over sixty percent of the companies reported that poor marketing expertise, attracting venture capital and penetrating export markets were the most important inhibitors for their growth. These results have confirmed InfoTech's management strategy on the need and appropriateness of the direction given to the activities of InfoTech's Industry Development Program (IDP).

In supporting development of marketing expertise the IDP has organized seminars to provide information on areas identified as concerns for software developers, dealing with such topics as copyright protection and marketing of software. It also provides general business and marketing assistance, including access to industry surveys and market analyses and stimulates the creation of joint ventures and linkages with major companies to maximize the opportunities for market development, investment and growth.

Attracting venture capital will be a continuing problem for software industries. However, IDP interfaces with provincial and federal programs to secure support and grants, reducing the risk of investors in the absence of effective R&D tax credits. IDP also provides awareness on how to raise private financial support, through seminars and business plans development, and provides information to organizations considering investments with local companies.

EXECUTIVE SUMMARY

In order to help develop export markets, IDP has organized trade missions, with assistance of the Trade Branch of Industry, Trade and Technology, to major conferences and exhibitions, with significant results.

Amongst other support activities undertaken by the IDP, provided leadership to create the Manitoba Software Association (currently with 75 active members). The Association will permit IDP program staff to work closely with the local companies and ensure it is directing its services towards their needs. It also arranged to have the Electronics Industry Association of Manitoba's Capabilities Directory include a section of companies involved in the information technology industry.

From consultations with the Association's members and industry, InfoTech intends to develop a catalogue of software products to encourage support of this industry through procurement by local firms and government.

In conclusion, the survey provides evidence that the Manitoba information technology industry, while relative small in number of companies, has significant maturity, technological and application strengths.

In the absence of effective R&D tax incentives to stimulate private sector investments for software development, continued government stimulus and assistance via procurement at the provincial and federal level and/or direct financial support programs to lower investment risks can and should continue to be used to support the growth of this industry.

In Manitoba limited funding assistance for software and courseware development has been provided through the Manitoba Technology Commercialization and Venture Capital Programs and the Manitoba-Canada ERDA Technology Applications Sub-Agreement. While this funding has provided significant results in supporting the growth of several companies, it is still very limited to stimulate a broad base of applications and the development of an industry with the strength to compete in the international market.

InfoTech plans to continue working to raise awareness and to promote in government, financial and industry circles the need for supporting this sector.

THE INFORMATION ECONOMY - A PERSPECTIVE

There is no doubt that the accelerated development of communications and information technologies over the past 20 years has started a revolution, affecting the economic and social structures of all western societies. The term ***Information Society*** has been coined to describe a shift from resource and industry based economies to technology and knowledge intensive based economies. It is changing the way Canadians live, work, and do business, and the organization of factories, schools and offices.

Information technology permits us to generate, store, manipulate and transmit increasingly more useful information. With this technology, information can be used to control production processes, develop new products and services, bring the world to our doorstep, and create overall efficiencies in virtually any organization.

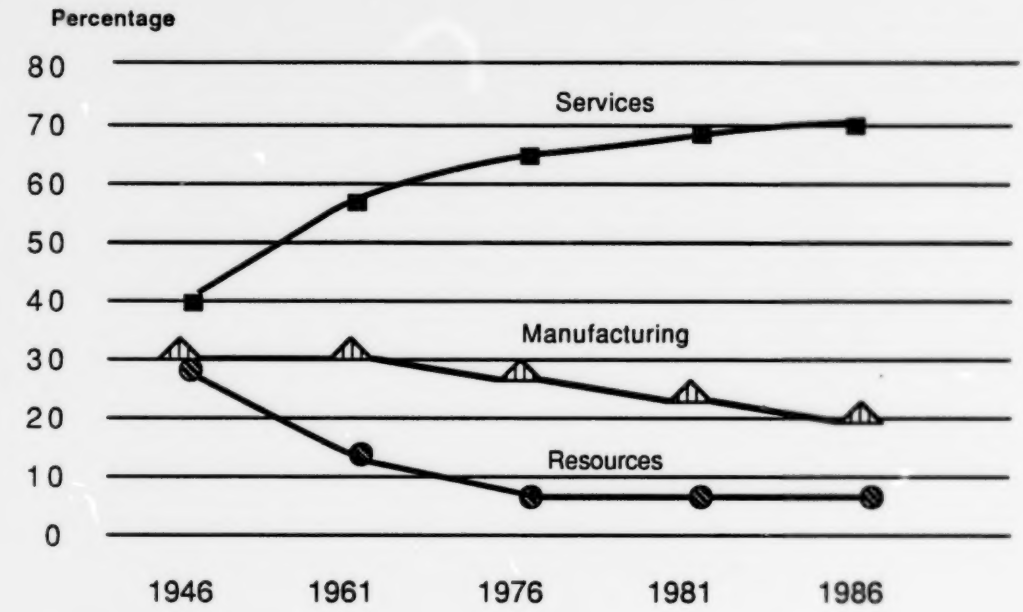
At the most fundamental level, this revolution is transforming information into a capital good, an integral input to any business activity. Access to timely and accurate information has always been crucial to formulating sound decisions, whether by governments or the private sector. The need to develop or to tap into sources of timely information, coupled with the growing development of communications and information technologies is the fuel of this revolution.

The application of electronics to processing information, in order to automate the office and factory floor environments, is broadly covered by the term ***"informatics"***. Informatics involves the integration of computers with telecommunications. Electronic data and word processing, facsimile and electronic mail, teleprocessing, computer assisted design/manufacturing (CAD/CAM) are some of the components of the informatics market, including the software that supports it.

This technology is already transforming the workplace. Virtually all of the 20 highest growth occupations forecasted for the 1980's deal with the handling of information. The Economic Council of Canada concluded recently that 70% of the total number of jobs inevitably lost through technological change falls into two groups - clerical and industrial trades (while there were 273,000 people in machining trades in 1981, there will be fewer than 13,000 by 1995). In contrast jobs supported with the use of computers is expected to grow 200% by 1995.

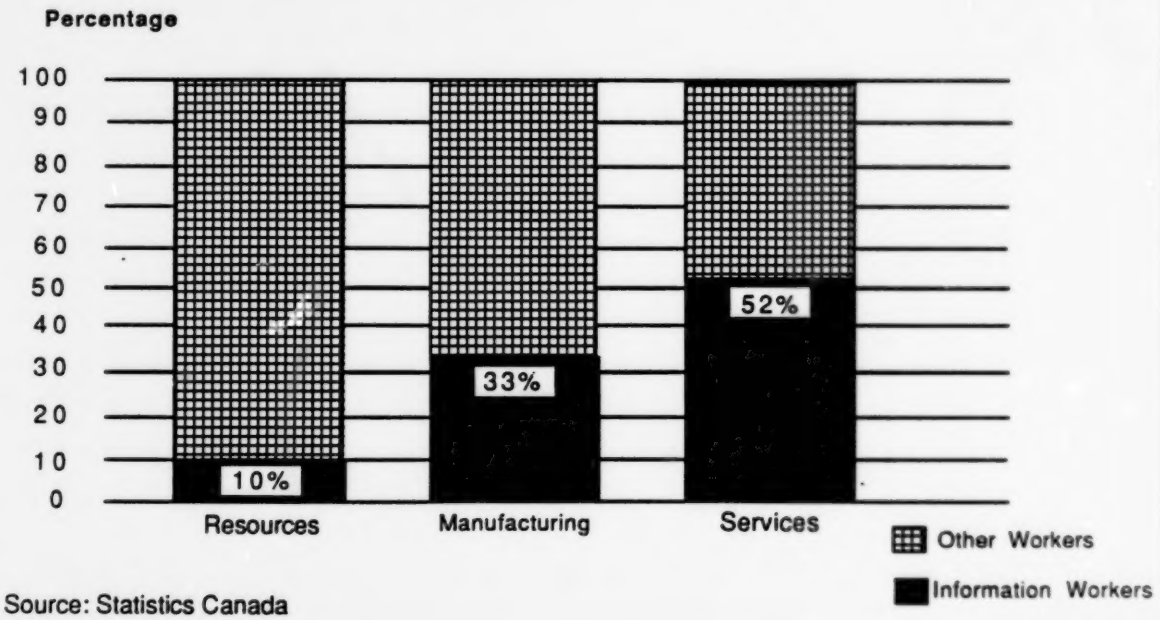
However, a report by OECD (Organization for Economic Cooperation and Development) issued in September 1987 indicated that "The application of information technologies (IT) has enhanced productivity without adding significantly to unemployment. - Research so far suggest that information technology based innovation tends to be capital saving (and labour generator), unlike earlier production technologies - The worries about the employment consequences of the IT revolution in offices and factories is a misconception leading to policy discussion in the wrong direction".

CANADIAN EMPLOYMENT BY INDUSTRY SECTOR



Source: Statistics Canada

CANADIAN INFORMATION WORKERS AS PERCENTAGE OF ALL EMPLOYMENT, 1986



Source: Statistics Canada

OECD also states that "rather than trying to predict the labour market implications of computerization, policy-makers should be concerned with eliminating the impediments to the widespread and rapid diffusion of IT and minimizing the adjustment costs for those adversely affected. In general terms, there are two main areas for government action: Fostering the expansion of the technology base in general and the diffusion of IT in small and medium size firms in particular; and secondly, ensuring the availability of a suitable trained skill force."

The growth of the primary, secondary and tertiary industries is dependent in its ability of using technology to remain competitive. The shift to a world based economy is affecting all aspects of production and commerce. Informatics is playing a significant role in supporting the competitive process of all western societies within the world economy. Recent evidence of this trend can be found in the use of these technologies to support the de-regulation process of financial markets, and the increased reliance that companies are placing on information technologies to increase their competitive position.

Statistics Canada has pointed out that the increasing importance of the service industries is related to the rise of the "information economy". The services sector has grown from 41% in 1946 to 71% in 1986, while manufacturing and resources declined to 29% and 7% respectively. The changed nature of the labour force is such that in 1986 information workers accounted for 45% of total employment.

For these reasons, the directions of National Science and Technology Policy, programs initiated by Federal Government Departments such as the Departments of Communications and Industry, Science and Technology (formerly DRIE), and regional development programs such as the Western Diversification Initiative, **have all identified informatics as a strategic sector.**

The Science Council of Canada indicated in its report of a National Consultation on Emerging Technology (May 1986) that information technologies will have the most widespread social impact in the next decade. The Department of Communications, in its recently released Communications for the Twenty-First Century identified databases and software as the key messages and products that will carry the current revolution a stage further. Together, databases and software are the cornerstones of the new information industries.

In conclusion, for Canada to be in a position to continue to develop its intellectual prowess it must develop and apply broadly and cost effectively the best available technology. As an open trading economy with a small population, Canada's standard of living ultimately depends on its success in exporting internationally competitive goods and services. Canada's traditional advantage, as a resource based economy, is being severely challenged by many other nations.

WORLD PRODUCTION OF INFORMATION TECHNOLOGY SYSTEMS

Growth estimates 1986 - 1995

	$ billion[1]			Average Annual Growth (%)
	1986	1990	1995	
Hardware	224	353	621	12
Software	84	174	433	20
Telecommunications[2] and computing services	85	107	143	6
TOTAL	393	634	1,197	13

1. At 1985 exchange rates.
2. Telecommunications equipment solely for the public network.

Source: OECD

Similarly, there is widespread concern in Canada's ability to compete with low-labour cost countries in a broad range of manufacturing sectors. There is no alternative but to seize the opportunities for innovation and productivity improvement in advanced technology fields such as informatics.

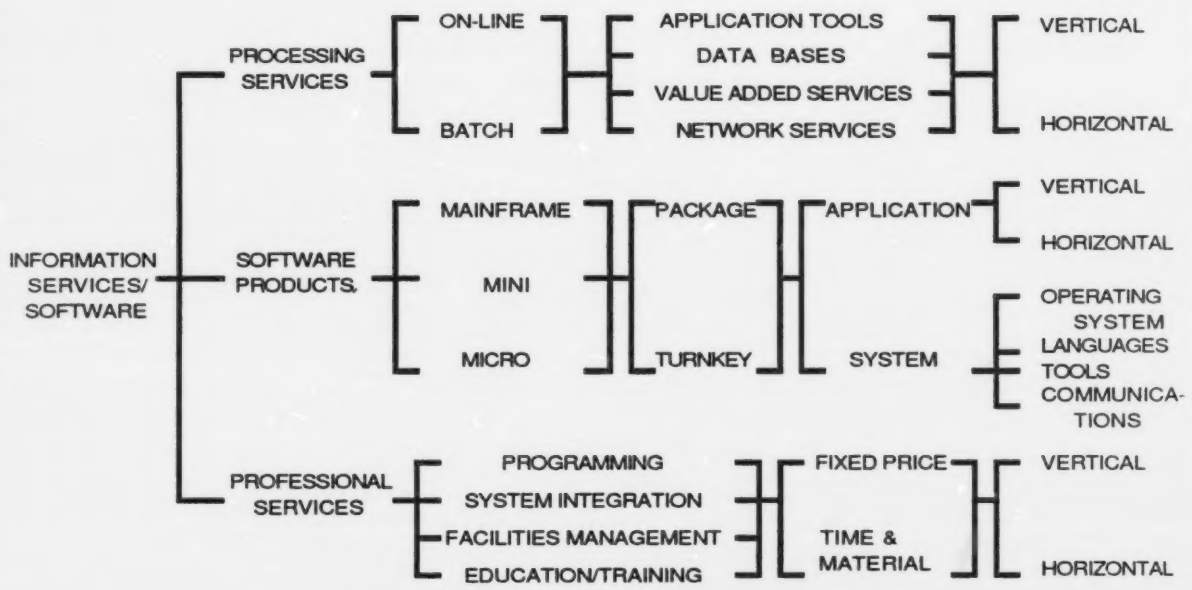
Software occupies a special place among the new informatics products. Today, software embodies the intelligence that drives all sectors of the information economy - such as the systems that control the manufacture of cars, industrial machinery and controls, and the communication networks that manage the intelligence of the new information based economy. It may be the single most important commodity in ensuring the future provincial and national economic success.

To develop this industry, there is no need for massive capital investments in buildings and expensive machinery; there are no barriers of trade amongst the provinces such as those existing to protect basic resources; one has to invest only in people, their entrepreneurship and their knowledge.

OECD notes in a recent study - "The data processing and telecommunications industry revolution may only just have started but already the information technology industry bulks large in OECD economies and is set to grow faster than almost any other sector in the coming years. To accelerate the diffusion of information technologies, governments may have to create a more propitious economic and regulatory environment, which also stresses the fact that, so far, the application of these technologies has enhanced productivity without adding significantly to unemployment" - (ICCP Report No. 12: Information Technology and Economic Prospects, OECD Paris 1987).

OECD also reported that the IT industry, encompassing the whole gamut of hardware and software for the processing and transmission of data, generated total worldwide revenues of nearly $400 billion in 1986, a figure that will be more than tripled by 1995. This sector has already accounted for up to 25 per cent of GNP in OECD countries by the early 1980's, and the proportion has risen since and will rise further in the future.

INFORMATION SERVICES SOFTWARE INDUSTRY STRUCTURE



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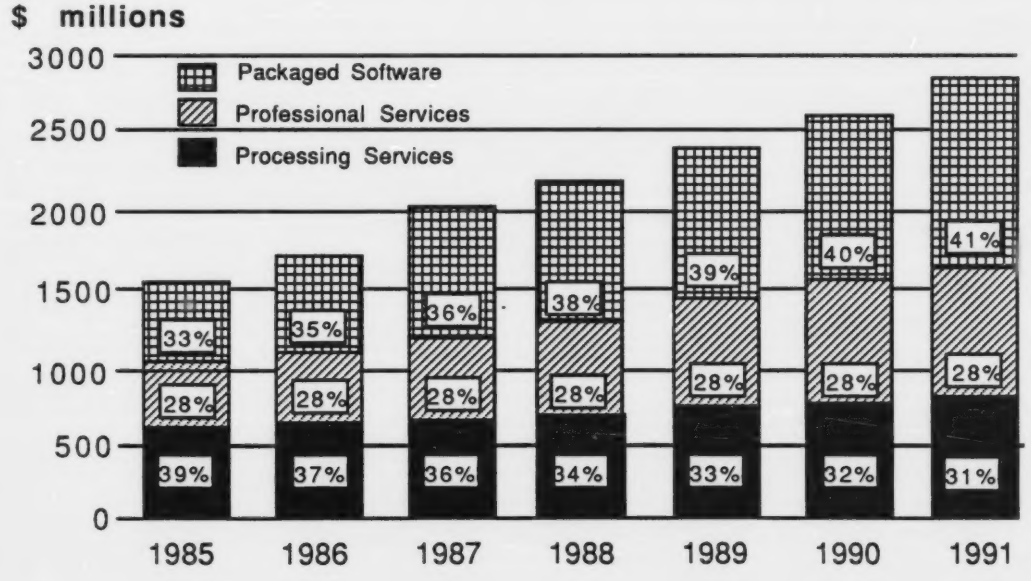
CANADIAN SOFTWARE AND SERVICES REVENUE



Source: International Data Corporation

THE SOFTWARE MARKET IN CANADA

The computer software and services industry is generally classified in three components: Software Products, Professional Services and Processing services. The growth (in current dollars) projected for the Canadian information technology and services industry indicates that the software market is growing faster than the other components.

The Canadian software and services marketplace grew 12% in 1986 which is about 10% lower from that experienced over the past ten years. This may be explained by the industry shakeout following the last recession, the accelerated introduction of new generations of microprocessor based hardware which have eroded traditional niches, and the lag in the introduction of new applications which can fully utilize the new hardware's functionality. However, assuming a levelled growth of 11% in 1987 and 10% thereafter, the market will reach $2.8 billion by 1991 in current dollars.

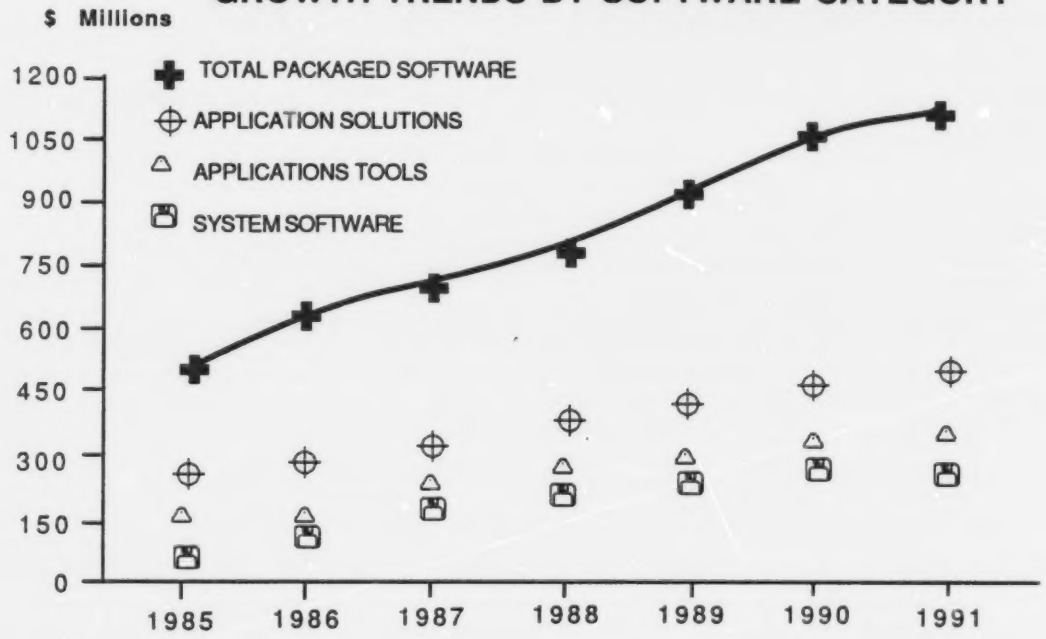
In contrast, the North American software products market is expected to grow from $16 billion at 22% per year through 1991 to reach $43 billion. The micro software market will grow from $3.4 billion at 28% through 1991 to reach $11.8 billion. The greatest opportunity facing the software industry is the rapidly expanding world market for software products and services, which is estimated to reach $90 billion by 1990.

Canadian companies have an opportunity to take advantage of this growing market due to the world class software expertise and innovative products its industry is recognized for in horizontal and vertical markets. A number of companies, created under the umbrella of universities such as Waterloo, are examples of excellence and growth in the software market.

However, the industry should be increasingly concerned with meeting international standards to maximize their export potential. Companies tend to succeed when applications are developed and properly marketed in response to perceived needs of the marketplace. Seldom can technologies be develop for markets that did not exist, such as it occurred with the successful development of Visi-Calc, one of the early application software tools which supported the growth of the microcomputer market.

One of the most successful and fastest growing software laboratories in IBM is located in Toronto, employing a large pool of talent produced by Canadian universities. This laboratory is the second largest in terms of private research and development activities in Canada and the only one involved primarily in software. Centers of excellence, such as the University of Waterloo have demonstrated the potential and effectiveness of universities to develop and promote advanced software for commercial and educational use. Several software companies in Canada have also developed successful niche markets, showing sustained economic and technical growth over the past few years.

THE CANADIAN PACKAGED SOFTWARE MARKETPLACE
GROWTH TRENDS BY SOFTWARE CATEGORY



Source: International Data Corportation

COMPANIES INVOLVED IN CANADIAN SOFTWARE MARKET

(Includes only companies whose major product is packaged software)

ESTABLISHMENTS BY REGION

Province	1984 Estimate	% of Total	1985 Estimate	% of Total	1986 Estimate	% of Total
Atlantic	34	3.3	36	3.4	39	3.5
Quebec	188	18.3	196	18.3	205	18.4
Ontario	469	45.8	488	45.6	507	45.4
Saskatchewan	25	2.4	27	2.5	28	2.5
Alberta	149	14.5	156	14.6	162	14.5
Manitoba	27	2.6	28	2.6	30	2.7
British Columbia	133	13	140	13.1	146	13.1
TOTAL	1,025	99.9	1,071	100.1	1,117	100.1
Canadian %	90		90		91	

Source: Statistics Canada and Evans Research Corporation Estimates (DRIE)

THE SOFTWARE MARKET IN CANADA

The accelerated development of micro-computers and its increased appetite for educational, business and scientific/technical software applications, have opened a new market with vast opportunities to support the emergence of small companies. The Canadian microcomputer market grew 12.3% in 1986 and is expected to grow at a similar rate in 1987 with shipments of 450,000 units at a value of $870 million. The total packaged software market in Canada is estimated to grow from $530 million experienced in 1985 to $1.15 billion by 1991. As a minimum the value of microcomputer software should equal the value of microcomputers shipped, or over $900 million. The ninety companies identified as part of this survey do not represent an increase over the 1986 figures quoted in the opposite chart.

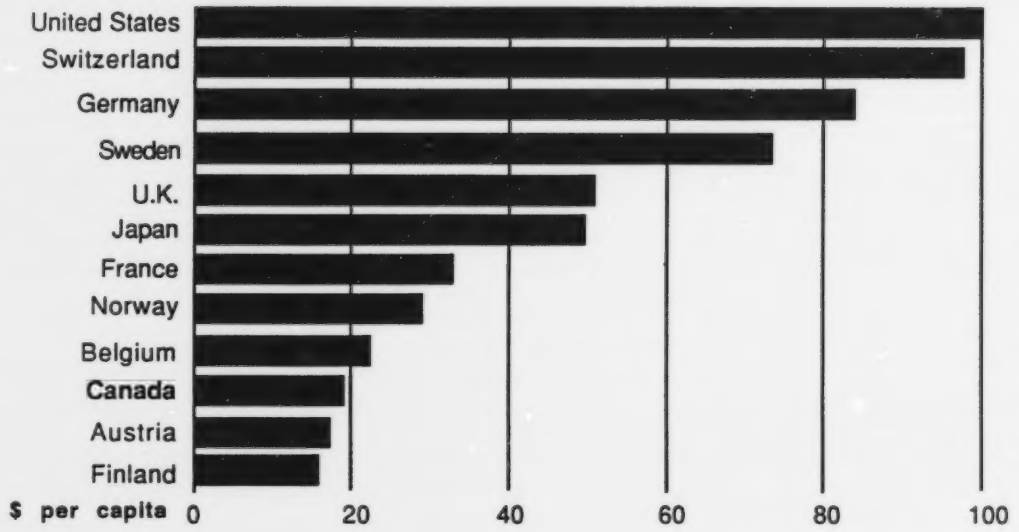
One reason for the continued growth in the packaged software is the ongoing development of specialized software for vertical markets. This software permits users to acquire "off the shelf" software as opposed to designing their own systems. There are many examples of Canadian packaged software that are competing very effectively in the North American and world markets. In fact, one major publisher in the United States has acquired distribution rights for two Canadian products developed in Vancouver and Winnipeg which are providing the bulk of its revenue.

Canadian companies involved in packaged software are not growing at the pace of the market. Most are single product companies which are usually exposed by fierce competition from abroad. These companies need a constant inflow of cash to keep pace with the developments in hardware, until their sales can support their existence and investments in R&D to develop new products, to replace those losing market currency. In addition to suffering financial restraints, the companies lack access to software publishers and distributors.

International Data Corporation stated that "the recent announcement of IBM introducing the PC/2 family of microcomputers with its proprietary operating system and the micro-channel bus architecture will slow down the growth of IBM compatible manufacturers yet allow a solid 20-25% growth in unit shipments". However, this product is already creating a race to adapt and develop software that takes full advantage of its capabilities, providing a market growth well into the mid 1990's. These developments may start focusing available investment on the development of applications software as opposed to hardware.

Broadview Associates states that the importance for vertical markets should not be overlooked by packaged software developers. "The market trend is for the development of front office applications that support key strategic functions within an industry, with solutions that address the critical elements for their business success". In accordance with several sources in Canada and abroad, the most important growth fields for packaged applications are the manufacturing, health, distribution and financial sectors.

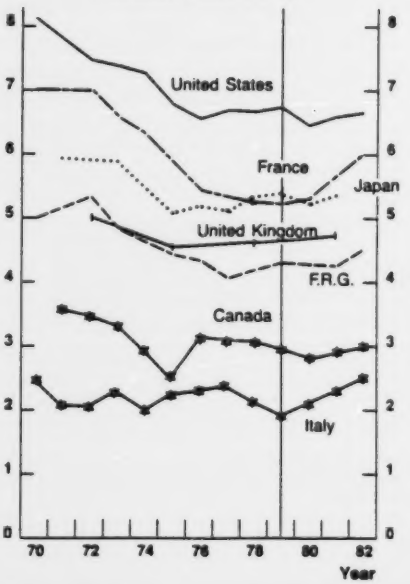
CANADIAN INFORMATION TECHNOLOGY RELATED R&D EXPENDITURE



Source: OECD 1984 (1979 data)

GOVERNMENT EXPENDITURE ON R&D AS A PERCENTAGE OF TOTAL GOVERNMENT DISBURSEMENTS(*)

MAJOR ECONOMIES



(*) Current disbursements plus current transfers of the general government.

Source: Science, Technology and Economic Development, MOSST Working Paper, 1985, p. 28.

INVESTMENT, RESEARCH & DEVELOPMENT

Canada's per capita expending in information technology research and development (R&D) is approximately one fifth of the United States and tenth amongst the Organization for Economic Cooperation and Development (OECD) countries.

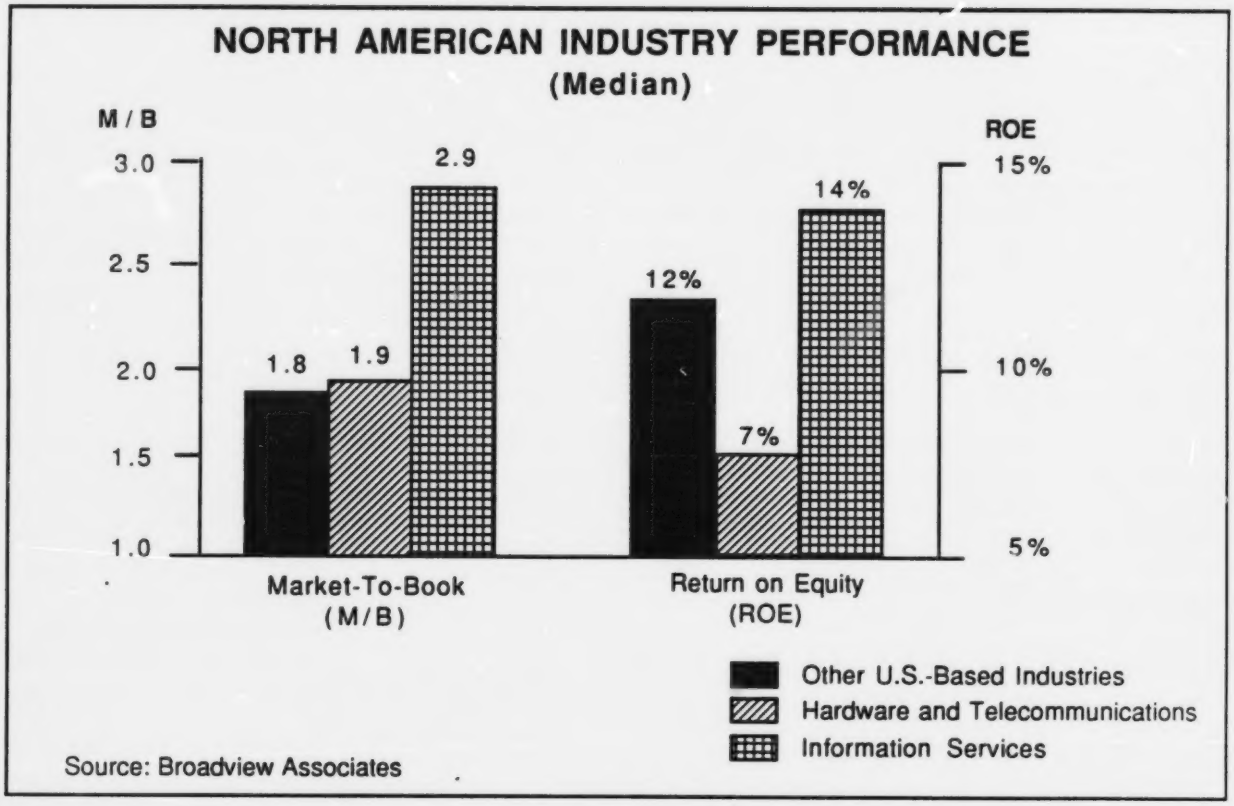
This gap is most certainly widened in view that most OECD countries have invested public resources in programs designed to increase the amount of information technology research. The leading countries not only have promoted research by their domestic industries but included programs designed to promote the transfer of technology from university and government laboratories to the private sector, where it can be exploited commercially

Organizations such as the Canadian Advanced Technology Association have advocated the need to implement progressive fiscal policies to promote research and development and to help match the risks and rewards. Revenue Canada, on the other hand, has placed significant restrictions on eligible expenditures, making it difficult for software developers to take advantage of the limited opportunities for using existing R&D taxable deductions. Addressing these issues is paramount in the informatics sector if Canada is to create a business environment which encourages risk taking to invest in the development and application of new technology.

Tax based R&D incentive programs have been by and large nightmares for many legitimate software developers, due primarily to the delay of defining what is software research and development. Despite Revenue Canada's efforts to define eligible software R&D, serious interpretation problems are still being encountered by many of the companies that are having their projects reviewed by academic scientific advisors. This ignores the commercial reality of the software industry.

Canadian capital has been very limited to software developers. The situation has been aggravated as a result of the cancellation of the federal R&D program and a recent major failure experienced in the Toronto Stock Exchange which has made investors overly cautious.

Due to the conservative nature of the Canadian capital markets and banking industry, firms involved in software development have difficulty in raising sizeable amounts of either venture capital or loans. Recent studies have shown that the reason for difficulties in obtaining equity and loan capital, aside from poor tax incentives, are their perceived shortcomings in marketing and management skills; these companies tend to be technically oriented, with strong software development capabilities, but weak in their general management and marketing.


NORTH AMERICAN INDUSTRY PERFORMANCE
(Median)
M / B
3.0
2.5
2.0
1.5
1.0
1.8
1.9
2.9
ROE
15%
10%
5%
12%
7%
14%
Market-To-Book
(M/B)
Return on Equity
(ROE)
Other U.S.-Based Industries
Hardware and Telecommunications
Information Services
Source: Broadview Associates

In contrast, this does not represent a major problem for U.S. firms, given attitudes of investors and more favourable procurement and fiscal policies of the American government. A breakdown of North American financing of software companies for 1986, as reported by Broadview Associates (New Jersey), was determined as follows:

Applications Software	36%
Systems Software	21%
Computer Services	18%
Graphics Software	15%
Artificial Intelligence	10%

This indicates the significant emphasis placed towards the development of applications software. Major brokers such as Broadview Associates have recognized the significant investment rewards derived from the informatics sector as indicated in the opposite chart.

As far as Canada is concerned, it is not following the lead of other countries in providing special support to our software industry. At the same time, there is disquieting evidence that the fastest growing sector of the software industry - packaged software - is increasingly dominated by foreign producers. Although the reasons for this are not altogether clear, it appears that many firms are badly underfinanced and are likely to have increasing difficulty in gaining access to major distribution networks.

A recent report on the software industry issued by DRIE states that "potential sources of funding for software R&D are split amongst five federal government departments, none of which has a clear mandate to fund software development through a complete cycle. There is no funding for the development of a commercial software that is not innovative, or in some way connected to the transfer of technology from government and university research labs".

In Manitoba limited funding assistance for software and courseware development has been provided through the Manitoba Technology Commercialization and Venture Capital Programs and the Manitoba-Canada ERDA Technology Applications Sub-Agreement. While this funding has provided significant results in supporting the growth of several companies, it is very limited to stimulate a broad base of applications and the development of an industry with the strength to compete in the international market.

SURVEY OF THE MANITOBA SOFTWARE INDUSTRY

A comprehensive survey of the status of the Manitoba software industry sector was undertaken in the Spring of 1987 by InfoTech's Industry Development Program (IDP). The objective of the study was to identify needs for support and determine the obstacles preventing the development of a viable and strong software industry in Manitoba.

There are approximately ninety companies known to the InfoTech Program as involved in information technology related fields including marketing & distribution, consulting & custom software development and proprietary software development. Seventy five of them are involved in the development of proprietary software for a variety of system environments, including mainframes, mini-computers and micro-computers. Fifty seven companies provided complete information in time to be considered for the survey results.

1987 CENSUS AND SURVEY RESULTS

Maturity of the Industry

The software industry as a whole is very young in Manitoba. Thirty companies (53%) of the fifty seven surveyed were founded since 1983 and thirty five (63%) of the companies have been involved in software development for less than five years. Only five companies reported revenues in excess of three million, with over 50% reporting revenues under $100,000.

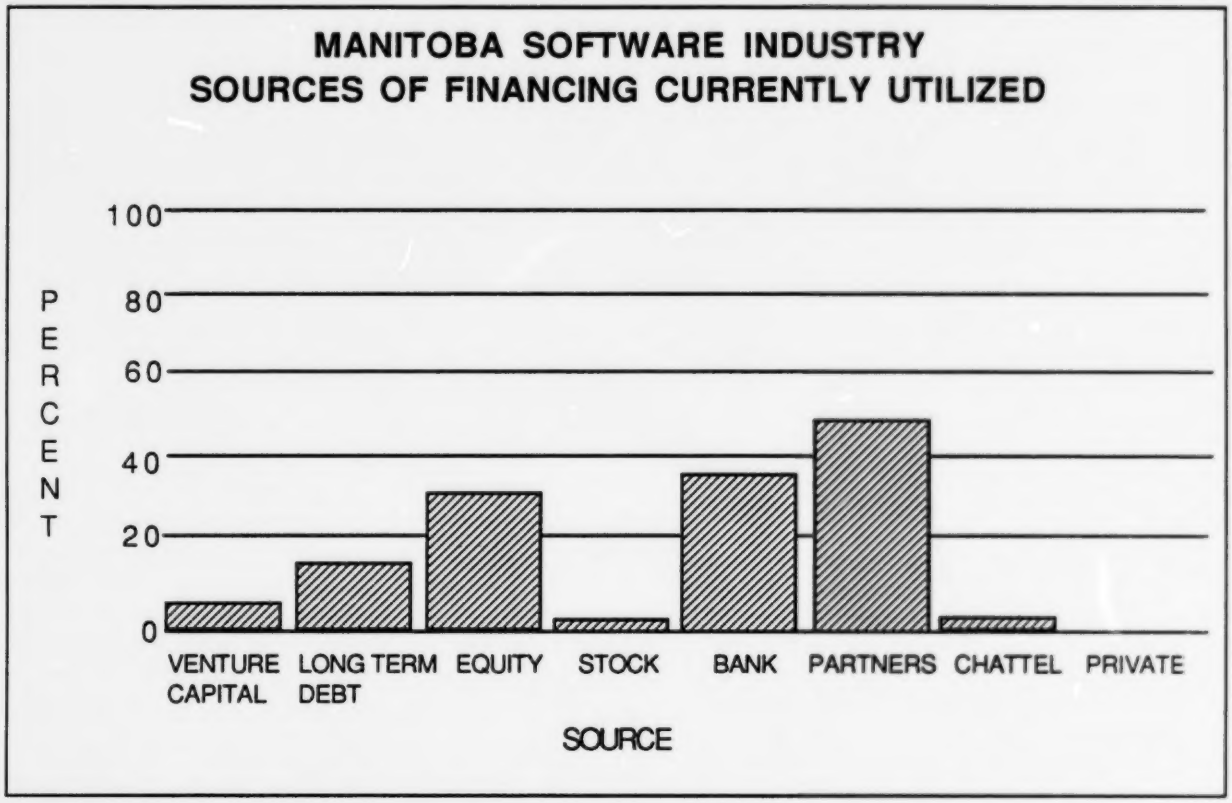
The size of the industry, based on the sample studied, is estimated at $52 million employing in excess of 900 professionals and support staff.

Over the last three years, thirteen percent of the companies indicated that they had no appreciable growth in software revenues. These were primarily companies involved in mini-computer environments. In contrast, thirty four percent reported very rapid growth in software revenues over the past three years. Sixty three percent of the companies expect their software revenues to grow very rapidly.

The packaged software industry in Manitoba is largely a cottage operation with most companies emerging as a result of the introduction and maturity of the micro-computer market.

Products

Of the fifty seven companies profiled, 99 software packages were identified, which represent at least 65% of the Manitoba software industry. There are over ten products that have achieved national and


MANITOBA SOFTWARE INDUSTRY
SOURCES OF FINANCING CURRENTLY UTILIZED
PERCENT
100
80
60
40
20
0
VENTURE CAPITAL
LONG TERM DEBT
EQUITY
STOCK
BANK
PARTNERS
CHATTEL
PRIVATE
SOURCE

international success in fields of: data storage protection; farm management and financial planning; data base management (superior to the leading international brand in price and performance); high speed circuit board analysis; investment portfolio management, three dimensional graphics; educational courseware; and health information management and applications in dentistry and pharmacy, amongst others.

Some of these packages are being marketed by well known international distributors with some of them being considered for national and worldwide distribution due to their technical performance and definite niche market opportunity.

Several Manitoba companies have proven to have the sophistication, skills, ideas and technical expertise to develop world class horizontal and vertically integrated software products, providing the leadership to establish a vibrant new industry in the Province.

Investment

The survey listed access to financing as one of the most critical aspects for developing and marketing their products. Fifteen companies stated their investment needs in the range of $51-100,000.00, with ten reporting investment needs of $50,000.00 or less.

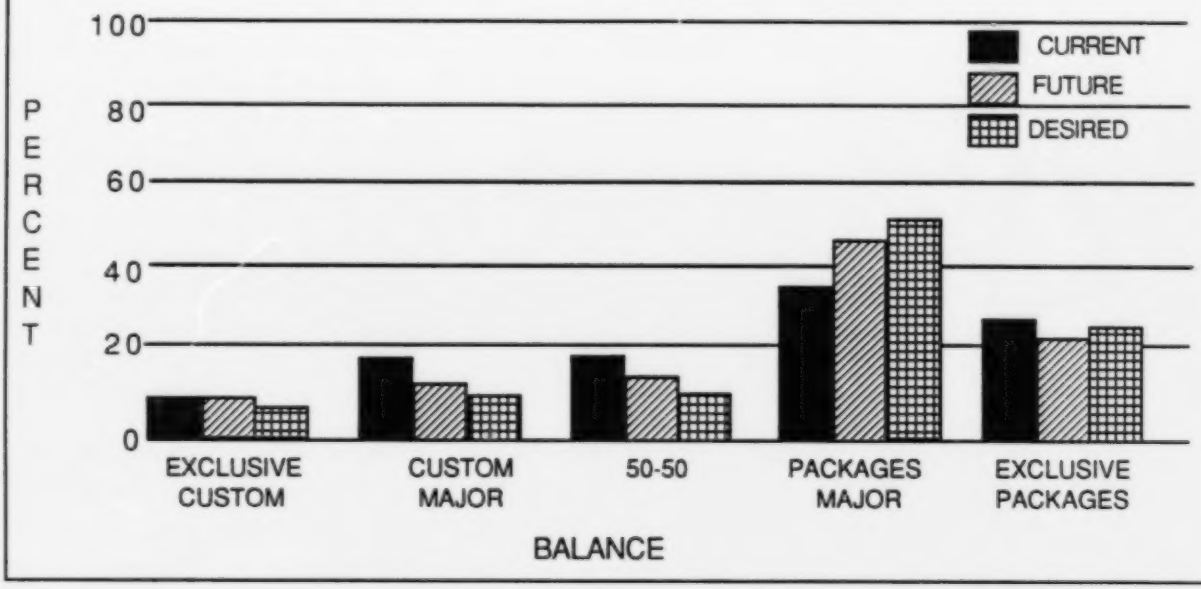
Given the investment levels required and the limited availability of venture capital, most of these companies would welcome effective R&D tax credits for software research. Government assistance to match privately raised funds are still required to reduce the risk of private investors, allowing companies to attract the required capital needed to continue stimulating this sector.

Marketing and Distribution

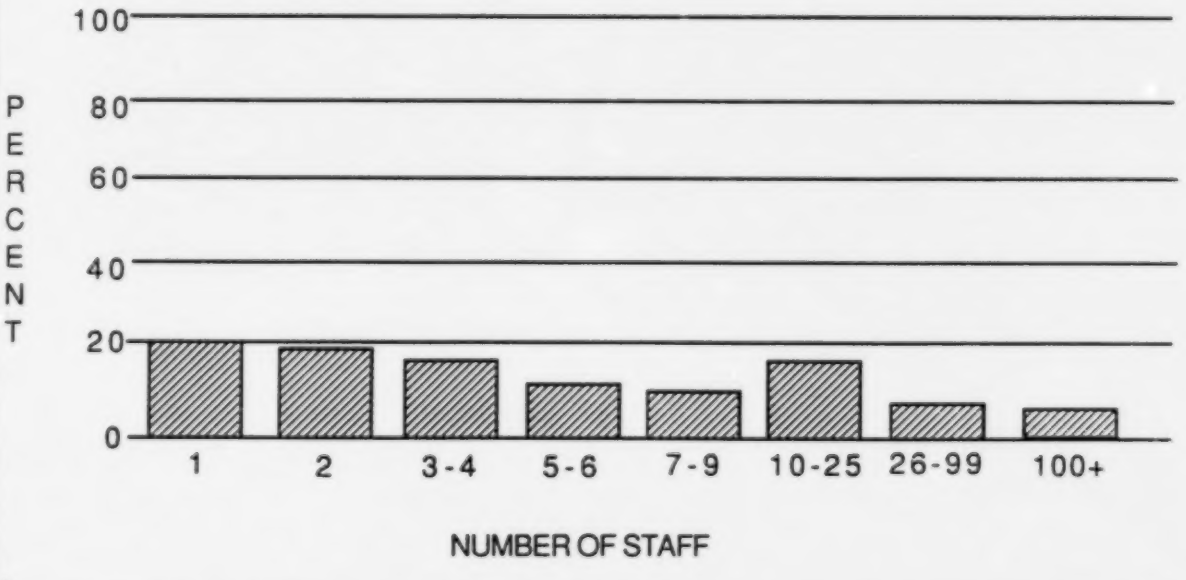
Most companies are small staff operations developing one application. They lack marketing expertise and are not adequately financed to undertake appropriate marketing and distribution of their products. Nineteen respondents cited their direction over the next three years to increased emphasis on sales staff, seminars and trade shows. Of the thirty two respondents to marketing questions, seventeen companies indicated spending less than 5% of their revenue on advertising. Seventy six percent indicated the need for a catalogue of Manitoba software products to promote and advertise the strengths of the industry.

Most companies require continued assistance to link-up with marketing expertise to market their products, and identified the need for a catalogue of software products made in Manitoba for distribution in government and industry.

MANITOBA SOFTWARE INDUSTRY
CURRENT FUTURE AND DESIRED
BALANCE OF CUSTOM/PACKAGED SOFTWARE



MANITOBA SOFTWARE INDUSTRY
CURRENT STAFFING LEVEL



Export Activity

Thirty companies reported sales outside Canada with twenty four exporting primarily to the U.S.A. and fifteen of them involved in the export market for four years or less. Currently software is exported to over 10 countries, mostly in Europe and including Asia and Australia. Their export revenues account for over thirty percent of total revenues.

The export trade rules and regulations (e.g. licencing) was the most frequently mentioned negative factor in dealing with international markets. Most of them indicated entering the export market through self-marketing, requesting limited support from government. Increased assistance in the understanding of such rules can help stimulate export development.

Product Development Strategy

Over 50% of the companies are involved in the development of packaged software vs custom software. Thirty nine companies (68%) have indicated that by 1988 they expect the major or exclusive focus of their business to be the development of packaged software. Currently, fifty three of the companies (93%) are developing software for the micro-computer environment with thirty five (60%) involved in the development of packaged software. Most companies develop software for the IBM and compatibles micro-computer market.

A significant number of companies indicated that increased emphasis on sales and marketing and innovative software development were the most important factors for future growth, citing financial constraints for research and development being one the most important inhibitors.

Employment

Most Canadian software companies that have succeeded and have become major players in the informatics field have started from fledging and often underfinanced cottage operations. Currently, fifty seven percent of the Manitoba companies have less than five employees. Seventy five percent indicated having started with less than three employees in their first year of operation. Currently, these companies employ over 900, expecting to grow at about ten percent per year.

Eighty percent of respondents anticipated staff increases in the next two years, with university and computer programming graduates needed to support increases in production.

From information provided by the companies participating in the survey it is evident that the information technology industry, while relative small in number of companies, has significant maturity, technological and application strengths. There are over ten leading companies which are already marketing services and products at the national and international level.

CONCLUSION

Over sixty percent of the companies reported that poor marketing expertise, attracting venture capital and penetrating export markets were the most important inhibitors for their growth. From information provided by the companies participating in the survey it is evident that the information technology industry, while relative small in number of companies, has significant maturity, technological and application strengths.

These results have confirmed InfoTech's management strategy on the need and appropriateness of the direction given to the activities of InfoTech's Industry Development Program (IDP). In answer to the above needs, the following activities have been undertaken:

Development of Marketing Expertise

- Seminars to provide information on areas identified as concerns for software developers, dealing with such topics as copyright protection and marketing of software;
- Provision of general business and marketing assistance, including access to industry surveys and market analyses; and
- Coordinating the creation of joint ventures and linkages with major companies to maximize the opportunities for market development, investment and growth;

Attracting Venture Capital

- Providing awareness on how to finance information technology companies, through seminars and business plans development;
- By coordinating provincial and federal programs to secure grants to stimulate development of ventures, reducing the risk of investors in the absence of effective R&D tax credits;
- By providing assistance and support information to organizations considering investments with local companies;

Development of Export Markets

- Through the organization of trade missions, with assistance of the Trade Branch of Industry, Trade and Technology, to major conferences and exhibitions;

Other Support Activities

- Provided leadership to create the Manitoba Software Association (MSA which currently has 75 active members); The Association will permit IDP program staff to work closely with the local companies and ensure it is directing its services towards their needs; The response to the Manitoba Software Association verifies that the industry does indeed need some common contact point;

- Arranged to have the Electronics Industry Association of Manitoba's Capabilities Directory include a section of companies involved in the information technology industry;

- InfoTech supports an on-line, key word search directory listing of Manitoba companies active in the information technology industry and liaises with other government departments to ensure companies are listed on other data bases such as BOSS and WIN export;

- As part of a business development project, InfoTech is working to entice a vertical software publishing company to relocate to Manitoba to aid local developers in marketing their products.

- Acquisition of software development tools for preview and evaluation by members of the MSA, including access to the facilities of the InfoTech Resource Centre; and

- The creation of 2 types of incubation space at its Resource Centre.

PLANNED ACTIVITIES

From consultations with the MSA's members, InfoTech intends to develop a catalogue of software products to encourage support of this industry through procurement by local firms and government. The IDP will continue in the ensuing years to respond effectively to the needs of the software industry and ensure its successful development.

In the absence of effective R&D tax incentives to stimulate private sector investments for software development, continued government stimulus and assistance via procurement at the provincial and federal level and/or direct financial support programs to lower investment risks can and should continue to be used to support the growth of this industry.